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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/826,431	04/04/2001	Jerome J. Cuomo	5051-511	8488

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EXAMINER
TRAN, MY CHAU T

ART UNIT	PAPER NUMBER
1639	18

DATE MAILED: 08/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	09/826,431	CUOMO ET AL.	
	Examiner	Art Unit	
	My-Chau T. Tran	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the corresp ndence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20 and 44-54* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20 and 44-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. Applicant's amendment filed 6/2/03 in Paper No. 17 is acknowledged and entered.

2. Claims 1-20 and 44-54 are pending.

3. Claims 1-20 and 44-54 are treated on the merit in this Office Action.

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Maintained Rejections

5. Claims 1-20, 44-45, and 47-54 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabled for coating the substrate with $Si(CH_3)_4$, the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the presently claimed scope of possible coating compound combinations as define by the definitions of (1)-(4) of claims 1, 44-45, and 47-50 in which the elements are selected from the group consisting of M, O, C, H, and N wherein M is a metal (e.g. 9 different type of metal claimed).

There are many factors to consider when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any experimentation is "undue". These factors include, but are not limited to:

1. The breadth of the claims.

2. The nature of the invention
3. The state of the prior art;
4. The level of one of ordinary skill
5. The level of predictability in the art;
6. The amount of direction provided by the inventor;
7. The presence or absence of working examples;
8. The quantity of experimentation necessary needed to make or use the invention based on the disclosure; See :*In re Wands* USPQ 2d 1400 (CAFC 1988):

(1-2) The breadth of the claims and the nature of the invention:

The present claim is directed to a substrate with a coated surface. Applicant's claimed coating comprise an amorphous chemically crosslinked materials that include not only the $Si(CH_3)_4$; but additionally encompass all possible combinations as define by the definitions of (1)-(5) of claims 1, 44-45, and 47-50 in which the elements are selected from the group consisting of M, O, C, H, and N wherein M is a metal (e.g. 9 different type of metal claimed). Accordingly, applicant's claimed invention encompasses an infinite number different combinations of coating that would include natural coating such as charcoal for which the coating is define by definition (3).

(3 and 5) The state of the prior art and the level of predictability in the art:

In the chapter of combinatorial aspects of material science of *Handbook of Combinatorial Chemistry* (Vol. 2, 2002, K.C. Nicolaou, R. Hanko, W. Hartwig editors) that cover the years of 1995-2001 (pg. 1019, lines 20-22), states that there is various methods of depositing films onto a substrate and that "*the lack of precise stoichiometric control and limited compositional range have relegated the technique primarily to optimization and exploration of systems with only two*

independent variables" (pg. 1022, lines 24-42). Further, the specification disclosed that there are a variety of techniques of coating the substrate and in the process of PECVD (plasma enhanced chemical vapor deposition) that there are many factors that influence the specific compositions and properties of the coatings and two of those factors are the type of precursor and process conditions that are used (pg. 7, lines 20-21). Therefore, the different aspects of coating a substrate cannot be predicted *a priori* but must be determined on a case to case base through experimental study.

(4) The level of one of ordinary skill in the art:

The level of skill would be high, most likely at the Ph.D. level.

(6-7) The amount of direction provided by the inventor and the existence of working examples.

The working examples are directed to coating the substrate with $Si(CH_3)_4$ as the precursor.

Accordingly, the specification discloses only limited examples that are neither representative of the claimed genus of coating compound combinations as define by the definitions of (1)-(5) of claims 1, 44-45, and 47-50 in which the elements are selected from the group consisting of M, O, C, H, and N wherein M is a metal (e.g. 9 different type of metal claimed).

(8) The quantity of experimentation needed to make or use the invention based on the content of the disclosure:

Accordingly, the undue breadth of possible coating compound combinations as define by the definitions of (1)-(5) of claims 1, 44-45, and 47-50 in which the elements are selected from the group consisting of M, O, C, H, and N wherein M is a metal (e.g. 9 different type of metal

claimed), the lack of guidance presented in the specification, the lack of representative examples for both making and use, necessitate the illustration of further examples demonstrating the making and use of a representative sample of coating compounds in order to provide the requisite enablement for the presently claimed invention as broadly claimed.

Response to Arguments

6. Applicant's argument(s) directed to the above rejection under 35 U.S.C. 112, first paragraph (Enablement), for claims 1-20, 44-45, and 47-54 have been fully considered but they are not persuasive for the following reasons.

Applicant argues "[t]he enablement rejection in light of the *Wands* factors" are as follows:

(1-2) The breadth of the claims and the nature of the invention (e.g. (A) and (B)):

Applicant argues for the breadth of the claims in that "[t]he claimed invention does not encompass an infinite number of combinations and the claims are not exceedingly broad in scope. The disclosure includes examples of precusor materals that can be used to deposit the claimed combinations, and thus, the disclosure is commensurate with the scope of the claims. See specification, page 7, lines 3-10." "[A]pplicants submit that charcoal is not an amorphous chemically crosslinked material. An example of an amorphous chemically crosslinked carbon coating is a diamond-like carbon coating, which is has both graphitic and diamond like characteristics."

Applicant's arguments are not convincing since the presently claimed invention is exceedingly broad in scope. The presently claimed invention is directed to a "composition" comprising a substrate and a coating, wherein the coating comprises an amorphous chemically

crosslinked material. The material comprises elements selected from the group consisting of M, O, C, H, and N, wherein M is a metal (e.g. as define by the claimed definitions of (1)-(5): "(1) M, O, C, H, and N; wherein M is a metal selected from the group consisting of silicon, titanium, tantalum, germanium, boron, zirconium, aluminum, hafnium and yttrium; (2) M, O, H, and N wherein M is defined above, (3) C; (4) O, C, H, and N; and (5) M or C, and one of O, H, or N"). There is no single core structure for claimed coating. The coating claimed comprises elemental materials such as C, H, O, N, and metal that are "amorphous chemically crosslinked" (e.g. these elements a bonded together to form ***any*** type of structure). As in claimed coating definition (3) "*the coating comprising an amorphous chemically crosslinked material that comprises the element of C*", such a coating would include naturally occurring carbon compound such as charcoal. Charcoal is an amorphous chemically crosslinked carbon coating. It is well known that natural carbon has at least three distinct forms (i.e. allotropes) and the "three common allotropes of carbon are diamond, graphite, and ***amorphous carbon*** (examples of amorphous carbon include charcoal, soot, and the coal-derived fuel called coke)" (MSN encyclopedia on the web). Since the claimed coating has no core structure and would include naturally occurring coating, the presently claimed "composition" is exceedingly broad in scope.

Applicant argues for the nature of the invention in that "[t]he present claimed are combination claims directed to a substrate with an amorphous chemically crosslinked coating. Combination claims have by long established practice been accorded broad scope of enablement."

Applicant's arguments are not convincing since the claimed coating has no core structure and would include naturally occurring coating, the presently claimed "composition" is exceedingly broad in scope as discussed above.

(3 and 5) The state of the prior art and the level of predictability in the art (e.g. (C) and (E)):

Applicant argues for the state of the prior art in that "[T]he art of substrate coating techniques, including plasma enhanced chemical vapor deposition, sputtering, evaporation, plain, dip-, flow- or spin coating, is well developed and provides a vast body of resources to which skilled persons can refer as an aid to practicing the present invention." And applicant argues for the level of predictability in the art in that "[T]his art is predictable. Unlike certain fields of biotechnology and pharmaceutical arts, which are generally considered highly unpredictable, the various techniques for making the claimed coated substrate are well-known and understood."

Applicant's arguments are not convincing since the level of predictability in the art for the claimed "composition" is high. The prior art has shown there are various methods of depositing films (i.e. coating) onto a substrate, but there are many factors that influence the composition (e.g. a substrate and a coating) produced from any of these methods (pg. 1022, lines 24-42 of *Handbook of Combinatorial Chemistry* (Vol. 2, 2002, K.C. Nicolaou, R. Hanko, W. Hartwig editors); see specification pg. 7, lines 20-21). And two of such factors are the type of precursor (starting material) and the process condition used. Since there is no core structure for the claimed coating, the level of unpredictability would increased as to production of the presently claimed composition for the type of starting material and process condition to be used

is "unknown". For example in claimed coating definition (3) "*the coating comprising an amorphous chemically crosslinked material that comprises the element of C*", what type of starting material and process condition is being used to produce the presently claimed composition? Therefore the level of predictability in the art for the claimed "composition" is high.

(4) The level of one of ordinary skill in the art (e.g. (D)):

Applicant argues that "[T]he level of ordinary skill in this art is high, and would encompass at least a Ph.D. coupled with post-doctoral or industry experience."

Applicant's argument is convincing since it has been stated that "[T]he level of skill would be high, most likely at the Ph.D. level."

(6-7) The amount of direction provided by the inventor and the existence of working examples (e.g. (F) and (G)):

Applicant argues for the amount of direction provided by the inventor in that "[C]onsiderable direction is given throughout the specification." Applicant argues for the existence of working examples in that "[e]ven in unpredictable arts, working examples are not required to satisfy the enablement requirement."

Applicant's arguments are not convincing since there is a limited working examples (e.g. example 1 is directed to coating the substrate with $Si(CH_3)_4$ as the precursor and examples 2-3 is directed the various type of deposition methods) and insufficient guidance in the specification (e.g. listing of other type of precursors, see specification pg. 7, lines 5-10) to practice the

presently claimed composition. Since there is no core structure to the claimed coating, the example (e.g. example 1) and the guidance provided in the specification (e.g. listing of other type of precursors, see specification pg. 7, lines 5-10) are insufficient to produce the presently claimed composition. For example in claimed coating definition (3) "*the coating comprising an amorphous chemically crosslinked material that comprises the element of C*", what type of starting material from the list of precursors in the specification on pg. 7, lines 5-10 and process condition is being used to produce the presently claimed composition? Therefore, there is a limited working examples and insufficient guidance in the specification to practice the presently claimed composition.

(8) The quantity of experimentation needed to make or use the invention based on the content of the disclosure (e.g. (H)):

Applicant argues that "[I]t is respectfully submitted that experimentation required to determine how to practice the instant invention would be routine to persons skilled in the art."

Applicant's arguments are not convincing since there is no core structure to the claimed coating it would take undue trials and errors to practice the presently claimed composition (e.g. the type of starting material and process condition is "unknown" since the core structure of the coating is unknown). Therefore it would take undue trials and errors to practice the presently claimed composition.

Based on the evidences as a whole regarding each of the above factors (e.g. factors 1-8), the specification, at the time the application was filed, would not have taught one skilled in the

art how to make and/or use the full scope of the presently claimed composition without undue experimentation. Therefore the above rejection under 35 U.S.C. 112, first paragraph (Enablement), for claims 1-20, 44-45, and 47-54 is maintained. Further, in response to applicant's arguments against the factors individually, one cannot show non-enablement by attacking the factors individually where the rejections are based on combinations of each of the above factors (e.g. factors 1-8).

Claim Rejections - 35 USC § 102

7. Claims 1-5, 8-9, 11-14, 44-45, 47-50 and 53-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Hu et al. (US Patent 5,494,712).

The present invention claimed a substrate comprise of coating with a terminated electrophilic or nucleophilic functional group, wherein the coating comprise of elements are selected from the group consisting of M, O, C, H, and N wherein M is a metal. The metal is silicon.

Hu et al. discloses a coated substrate (col. 1, lines 45-53). The substrate comprises a polymer coating that is further characterized as being a highly crosslinked polymer containing at least on of the following groups (col. 2, lines 7-17). The groups are Si-O-Si, Si-CH_2, Si-H, and Si-OH. The organosilicone compound (precursor) use includes silanes and siloxanes (col. 7, lines 25-38) (refer to claim 53). The silanes include tetramethoxysilane (refer to claim 54). The method of depositing the coating is PECVD (plasma enhanced chemical vapor deposition) (col. 4, lines 3-24). The substrate coating can be flexible (an amorphous chemically crosslinked

material) (col. 7, lines 13-15). Therefore, the coated substrate of Hu et al. anticipates the presently claimed invention.

Response to Arguments

8. Applicant's argument(s) directed to the above rejection under 35 USC 102(b) as being anticipated by Hu et al. (US Patent 5,494,712) for claims 1-5, 8-9, 11-14, 44-45, 47-50 and 53-54 were considered but they are not persuasive for the following reasons.

Applicant contends that "[H]u does not teach or suggest a chemically crosslinked coating material that is terminated with at least one electrophilic or nucleophilic group for the adsorption and nonadsorption of biomolecules as recited in the claims." And "[M]oreover, Claim 17 is independently patentable over Hu. Claim 17 recites that "the coating has a thickness between about 200 and about 400 nanometers." In contrast, the coatings discussed in Hu have abrasion resistant properties and, as a result, the coatings are described as being significantly thicker than about 200 to about 400 nanometers."

Applicant's arguments are not convincing since Hu et al. do teach a chemically crosslinked coating material that is terminated with at least one electrophilic or nucleophilic group. The present invention (e.g. dependent claims 1, 44-45, 47-50 and 53-54) claimed a substrate comprise of coating with a terminated electrophilic or nucleophilic functional group, wherein the coating comprise of elements are selected from the group consisting of M, O, C, H, and N wherein M is a metal. The "*electrophilic or nucleophilic functional group*" as claimed in claim 1 is that "*the electrophilic or nucleophilic functional group consisting of hydrogen-termination, alkyl groups, quarternary ammonium groups, carbon, silicon, halogen, oxygen, hydrogen, nitrogen, sulfur and phosphorus.*" Hu et al. disclose a substrate with a polymer

coating wherein the polymer comprises of a highly crosslinked polymer contains at least one of the following groups: Si-O-Si, Si-CH_2, Si-H, and Si-OH (col. 2, lines 1-17). In example 1, an infrared spectrometric analysis of the polymer coating indicates that the polymer coating has the following functional group: Si-O-Si, Si-CH_2, Si-H, and Si-OH (col. 8, lines 50-59) (e.g. the coating is terminated with the electrophilic or nucleophilic functional group such as silicon, alkyl groups, hydrogen-termination, oxygen, and hydrogen). Therefore, the substrate of Hu et al. anticipates the presently claimed substrate (e.g. claims 1-5, 8-9, 11-14, 44-45, 47-50 and 53-54), because Hu et al. teaches all the structural limitations of the presently claimed substrate. Additionally, the limitation wherein "*at least one electrophilic or nucleophilic group for the adsorption and nonadsorption of biomolecules*" is not cited in the rejected claims (e.g. claims 1-5, 8-9, 11-14, 44-45, 47-50 and 53-54), but rather in the claims 6-7, 10, and 15-16, which are ***not*** rejected by Hu et al. Since these dependent claims (e.g. claims 6-7, 10, and 15-16) were not included in this rejection as being anticipated by Hu et al., the argument is considered moot.

Further with regard to the applicant argument of the dependent claim 17 being "independently patentable over Hu", the argument is considered moot since claim 17 ***was not*** included in this rejection as being anticipated by Hu et al.

9. Claims 1-20, 44-45, and 47-50 are rejected under 35 U.S.C. 102(b) as being anticipated by Cozzette et al. (US Patent 5,063,081).

The present invention claimed a substrate comprise a base layer, an intermediate layer and a coating with a terminated electrophilic or nucleophilic functional group, wherein the coating comprise of elements are selected from the group consisting of M, O, C, H, and N

wherein M is a metal. The metal is silicon. The biomolecule is adsorbed to the electrophilic functional group.

Cozzette et al. disclose a coated substrate comprises a planar wafer (base layer), a base sensor (intermediate layer), and a semipermeable solid film (coating) (col. 13, lines 54-62). The semipermeable solid film can function as adhesion promoters for biomolecule (col. 13, lines 65-68 to col. 14, lines 1-4). The planar wafer includes silicon wafer, glass sheet, or plastic (col. 26, lines 66-68 to col. 27, lines 1-6) (referring to claim 18). The base sensor includes titanium or gallium arsenide (col. 27, lines 7-20) (referring to claim 20). The base sensor is between the planar wafer and the semipermeable solid film (col. 13, lines 54-62; fig. 2) (referring to claim 19). The semipermeable solid film comprise of a silane compound that include a terminal amine group in which an enzyme can be attached (col. 28, lines 50-62). The thickness of the semipermeable solid film lies in the range of 1 to about 1000 nm (col. 30, lines 29-34) (referring to claim 17). Therefore, the coated substrate of Cozzette et al. anticipated the claimed invention.

Response to Arguments

10. Applicant's argument(s) directed to the above rejection under 35 USC 102(b) as being anticipated by Cozzette et al. (US Patent 5,063,081) for claims 1-20, 44-45, and 47-50 were considered but they are not persuasive for the following reasons.

Applicant alleges that "[C]ozzette does not teach or suggest a material that is terminated with at least one electrophilic or nucleophilic group for the adsorption or nonadsorption biomolecules as claimed by Applicants." Further, "[A]dsorption and nonadsorption is an electrostatic phenomenon and does not involve a formation of chemical bonds."

Applicant's arguments are not convincing since Cozzette et al. do suggest a material that is terminated with at least one electrophilic or nucleophilic group for the adsorption or nonadsorption biomolecules. The rejection cited one aspect of the "semipermeable solid film" interaction with the biomolecule (e.g. enzyme) in which it is a "covalent" interaction (col. 28, lines 50-62). However, Cozzette et al. also disclosed that 'an important aspect of the present invention is the discovery and recognition that certain classes of silane reagents can be formulated into a convenient medium, established onto a substantially planar surface, and subsequently treated under controlled conditions to provide a layer or coating (e.g. semipermeable solid film) with permselective properties' (col. 29, lines 29-35). The "permselective properties" are properties that exclude certain molecules such as "the types of interfering electroactive species that one may wish to exclude from interacting with the metal catalyst surface include, but are not limited to, uric acid, ascorbic acid, salicylic acid, 2-(p-isobutylphenyl)propionic acid, cysteine, 4-acetamidophenol (acetaminophen), reduced glutathione, and the like, including their physiological salts in addition to any drug or metabolite thereof" (col. 30, lines 29-48) (refers to electrophilic or nucleophilic group for the adsorption or nonadsorption biomolecules). Therefore, the substrate of Cozzette et al. do anticipate the presently claimed substrate of claims 1-20, 44-45, and 47-50.

Claim Rejections - 35 USC § 103

11. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hu et al. (US Patent 5,494,712) in view of Matsui et al. (US Patent 5,403,630).

The present invention claimed a substrate comprise of coating with a terminated electrophilic or nucleophilic functional group, wherein the coating comprise Si, C, and H deposited in a PECVD process with a tetramethyl silane ($Si(CH_3)_4$) precursor.

Hu et al. discloses a coated substrate (col. 1, lines 45-53). The substrate comprises a polymer coating that is further characterized as being a highly crosslinked polymer containing at least on of the following groups (col. 2, lines 7-17). The groups are Si-O-Si, $Si-CH_2$, Si-H, and Si-OH. The organosilicone compound (precursor) use includes silanes and siloxanes (col. 7, lines 25-38) (refer to claim 53). The silanes include tetramethoxysilane (refer to claim 54). The method of depositing the coating is PECVD (plasma enhanced chemical vapor deposition) (col. 4, lines 3-24). The substrate coating can be flexible (an amorphous chemically crosslinked material) (col. 7, lines 13-15).

The coated substrate of Hu et al. does not expressly disclose that the precursor of tetramethyl silane.

Matsui et al. disclose a coated substrate (col. 1, lines 67-68 to col. 2, lines 1-3). The method of coating the substrate is vapor-phase growth method. The organosilicone compound (precursor) use includes tetramethyl silane (col. 3, lines 42-47).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include tetramethyl silane as a precursor as taught by Matsui et al. in the coated substrate of Hu et al. One of ordinary skill in the art would have been motivated to include tetramethyl silane as a precursor in the coated substrate of Hu et al. for the advantage of forming a highly insulating thin film having good step coverage since both Hu et al. and Matsui et al. disclose using as a precursor organic oxysilane compound and the reactant is in the gaseous

form (Hu: col. 5, lines 3-6 and col. 7, lines 25-38; Matsui: col. 2, lines 4-11 and col. 3, lines 42-47).

Response to Arguments

12. Applicant's argument(s) directed to the above rejection under 35 USC 103(a) as being unpatentable over Hu et al. (US Patent 5,494,712) in view of Matsui et al. (US Patent 5,403,630) for claim 46 were considered but they are not persuasive for the following reasons.

Applicant contends that "[H]u does not teach or suggest a chemically crosslinked coating material that is terminated with at least one electrophilic or nucleophilic group for the adsorption and nonadsorption of biomolecules as recited in the claims." And that there is no motivation to combine the references of Hu et al. and Matsui et al. since "[H]u is not concerned with the insulating properties or the "step coverage" of the coatings made by its proposed method."

Applicant's arguments are not convincing since the substrate of Hu et al. anticipate the presently claimed substrate of claim 46 because Hu et al. teaches all the structural limitations of the presently claimed substrate wherein the "*substrate comprise of coating with a terminated electrophilic or nucleophilic functional group, wherein the coating comprise Si, C, and H*". Hu et al. disclose a substrate with a polymer coating wherein the polymer comprises of a highly crosslinked polymer contains at least one of the following groups: Si-O-Si, Si-CH_2 (e.g. a chemically crosslinked material comprising Si, C, and H as claimed in claim 46), Si-H, and Si-OH (col. 2, lines 1-17). Since the limitation wherein "*at least one electrophilic or nucleophilic group for the adsorption and nonadsorption of biomolecules*" is not cited in claim 46, the argument that Hu et al. do not anticipate the presently claimed substrate of claim 46 is considered moot.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Hu et al. further disclose a "method a plasma enhanced chemical vapor deposition method (PECVD) is used to initiate the polymerization reaction of an organosilicone compound" (col. 1, lines 45-49) (e.g. a chemically crosslinked material comprising Si, C, and H deposited in a PECVD process as claimed in claim 46). Matsui et al. disclosed a vapor-phase growth method of coating a substrate using an organic oxysilane compound in which one type of organic oxysilane compound (e.g. precursor) is tetramethyl silane. Both Hu et al. and Matsui et al. method is vapor deposition for the polymerization reaction of an organosilicone compound (e.g. analogous art) therefore there is reasonable expectation of success to use the tetramethyl silane precursor of Matsui et al. in the method of Hu et al. Therefore, the presently claimed substrate of claim 46 is unpatentable over Hu et al. in view of Matsui et al.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My-Chau T. Tran whose telephone number is 703-305-6999. The examiner is on ***Increased Flex Schedule*** and can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew J. Wang can be reached on 703-306-3217. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1123.

mct
August 4, 2003

PADMASHRI PONNALURI
PRIMARY EXAMINER